

DUST SENTRY

Near reference real-time particle monitor for specific dust fractions

Designed for those who need to monitor and manage specific outdoor dust and particulate emissions continuously and in real-time.

The Dust Sentry is a nephelometer-based instrument that delivers defensible and accurate mass measurement for PM₁₀, PM_{2.5}, PM₁, or TSP.

MCERTS certified and SCAQMD Rule 1466 pre-approved.



What is it?

- A weather-proof nephelometer-based monitor with integrated solar shielding for outdoor monitoring of dust and particulates.
- A modular and configurable monitoring platform for measuring specific dust and particulate sizes, with the option to integrate wind, noise, and weather sensors.
- A flexible communication platform that transfers real-time data wirelessly.
- A web interface accessed via browser that lets you view all your data and set email / sms alerts on parameters of concern.

What can it measure?

PM₁₀ or PM_{2.5}, PM₁, or TSP, depending on the nephelometer selected. Nephelometers are dedicated to a single size of particulate.

Who is it for?

Industrial operators who need a cost effective and robust solution to manage and control dust and particulates from activities at:

- Construction and remediation sites
- Quarry and mine sites
- Port and bulk-handling terminals
- Waste management sites

Environmental consultants who need defensible measurements for their clients.

Regulatory authorities who require deployable, rapid response incident monitoring

Environmental health & safety managers who must demonstrate that they are providing a safe work environment.

Researchers who need an affordable means to collect accurate, scientifically robust data.



Particle Module	Sizes	Range	Accuracy	Resolution	Lower Detectable Limit (2 σ)
Nephelometer	PM ₁ PM _{2.5} PM ₁₀ or TSP	0 to 60,000 $\mu\text{g}/\text{m}^3$	$\leq \pm(2 \mu\text{g}/\text{m}^3 + 5\% \text{ of reading})$	0.1 $\mu\text{g}/\text{m}^3$	$< 1 \mu\text{g}/\text{m}^3$

System Specifications	
Control System	Embedded fanless PC, Intel Atom N2600 @ 1.6 Gz, 2 GB RAM, 32 GB SSD, Ubuntu Linux OS
Communications	WiFi, Ethernet (LAN) standard. Cellular IP HSPA 4G modem optional.
Software	Connect: Runs on embedded PC and accessed via web browser. Cloud: Runs on secure cloud servers, access via web browser. Features: Remote configuration, diagnostics, journal, calibration, and data acquisition. Optional features: SMS and email alerts, auto data export via email or FTP.
Datalogging	32 GB solid state hard drive with capacity for > 5 years data storage.
Outputs	Optional 2 x relays or 4 x 4-20mA.
Averaging Period	1, 5, 10, 15, 20, 30 minutes, 1, 2, 4, 8, 12, 24 hours.
Power Requirements (heater on/off)	100-260 VAC @ 21 W / 30W. Regulated 12 VDC @ 21W / 30W.
Enclosure	Lockable IP65 GRP cabinet with integrated aluminum solar shield.
PM Sampling System	Inlet: Omni-directional 14.1 inch heated inlet with sharp cut cyclone for selected particle size. Pump: 12V brushless DC diaphragm pump. Optics: 670 nm laser, near-forward scattering nephelometer with sheath air protection.
Dimensions H, W, D	19 x 13 x 7.4 inch, including solar shield and mounting bracket.
Weight	28.6 lb.
Environmental Operating Range	14 to 122 °F (-10 to +50 °C).
Mounting method	Pole, tripod, wall mounting brackets included.
47mm Sample Filter (Optional)	47 mm filter for particle loading analysis.
Factory Integrated & tested Sensors (optional)	Gill WindSonic(ultrasonic wind sensor), Vaisala WXT536 (weather transmitter), Met One MSO (weather transmitter, Cirrus MK427 Class 1 (noise sensor), Novalynk Pyranometer (solar radiation).

Aeroqual products are designed, manufactured, and patented by Aeroqual Limited, 460 Rosebank Road, Avondale, Auckland 1026, New Zealand